



STEM Career Day- Grades 6-8

Massachusetts Institute of Technology



An exciting **STEM Career Day** took place last Friday, Feb. 1st, for Douglas 6th, 7th, and 8th graders, at Douglas Intermediate Elementary School and Douglas High School, with the theme of “Engineering is Everywhere!” All students in grades 6-8 enjoyed a series of special presentations from guest speakers currently working in the fields of Science, Technology, Engineering, and Math (STEM), or pursuing college majors or graduate study in STEM fields. The goal of conducting STEM Career Day was two-fold: to encourage all students to pursue further study in college in STEM subjects, and to consider preparing for a STEM career in the future.

Speakers from the MIT Women’s Initiative conducted presentations for our girls that were specially designed to encourage them to pursue STEM study and career opportunities. The presentations included activities designed to engage our girls in engineering concepts, see demonstrations of projects on which the presenters have worked, and be exposed to information about the fields of engineering and the life of an engineering student. The speakers were **Ms. Judy Rodriguez** – a senior majoring in Nuclear Engineering; and **Ms. Kat Kononov** – a graduate student specializing in electrical engineering - both students at the Massachusetts Institute of Technology (MIT). **Ms. Rodriguez** and **Ms. Kononov** explained what engineering actually is by giving concrete examples of engineering projects, and by showing students that the world is filled with the products of engineers. They also described various engineering fields - including aerospace, biomedical, chemical, civil, electrical, environmental, mechanical and nuclear - and shared with our students what life as an engineering student is like. They then had students identify examples of engineering around the room and name the type of engineering used to create it. The young women also discussed and dispelled the stereotypes surrounding the engineering field. Finally, the girls participated in a design challenge to engage their thinking about engineering concepts, in which they had 25 minutes to build the tallest tower they could out of 10 paper clips, 20 straws and 18 inches of tape!



(Left) Seventh graders Lily Morgan, Erin Correia, Rachel Maciejewski, Rebekka White, Sydney Connor & Morgan Benoit pictured with their awesome tower!

www.mit.edu



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The team of 6th grade girls pictured at left won the 6th grade MIT tower challenge by creating the tallest tower from 20 drinking straws, 10 paper clips, and 18 inches of tape!

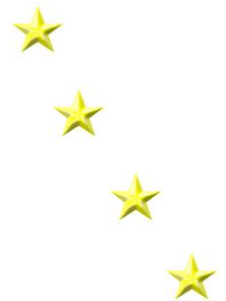
Front row, left to right – **Julia Cellucci, Cassidy Dunleavy, and Kelsey Gilbert.**

Back row left to right –**Kat Kononov from MIT, Erin Theroux, Abigail Sullivan, and Judy Rodriguez from MIT. Congratulations!**

Engineering Design Challenge



(Left) **Nicole Murphy, Mandy Laporte & Jordan Perry** build their tower.



(Below) **Daniella Damasio, Natalie Champagne, Sara Finnegan, Melina Schilling, Ashlee Bartels & Natalie Fenoff**



(Above) **Caroline Ranslow, Olivia Setzer, Kelsey Lafleur, Josie Garland, Hannah Rochon & Ashley Deluca**



www.emc.com



Our boys in grades 6 and 7 also heard presentations from professionals working in STEM fields. **Ms. Marjorie Miller** and **Mr. Don Morin** of **Intel Corporation** conducted presentations for our 8th grade boys. Our 6th and 7th grade boys enjoyed one presentation by **Mr. David Vassar** and **Mr. Curtis Johnson** of EMC Corporation, and a second presentation from **Ms. Kay Gruder**, High School Representative from the New England Institute of Technology in East Greenwich, RI. All three presenters shared information and experiences from the perspective of STEM professionals, and engaged students in “hands-on” engineering activities.

Mr. Curtis Johnson (Senior Data Scientist) and **Mr. Dave Vassar** (Logistical Engineer) discussed how EMC builds hard drives and data storage systems for most major companies. Students looked at small and large hard drives and discussed the increasing rate of data generation. They learned the terminology of data storage from a byte which is the smallest amount of data storage to a yottabyte which is 1,000 zetabytes! Finally, they participated in a 5-minute design challenge in which they had to design a way to move a ball across the room into a basket using only a washer and two pieces of string. The boys also enjoyed receiving special EMC pens!



Curtis Johnson (Senior Data Scientist) and Dave Vassar (Logistical Engineer)



(Above) Damon Llopiz, Max Postma, Anthony Valliere & Ian Murphy



(Above) Joshua Cyr, Jared Ayotte, Damian Dereszkievicz & Henry Torpey



The Challenge Winners

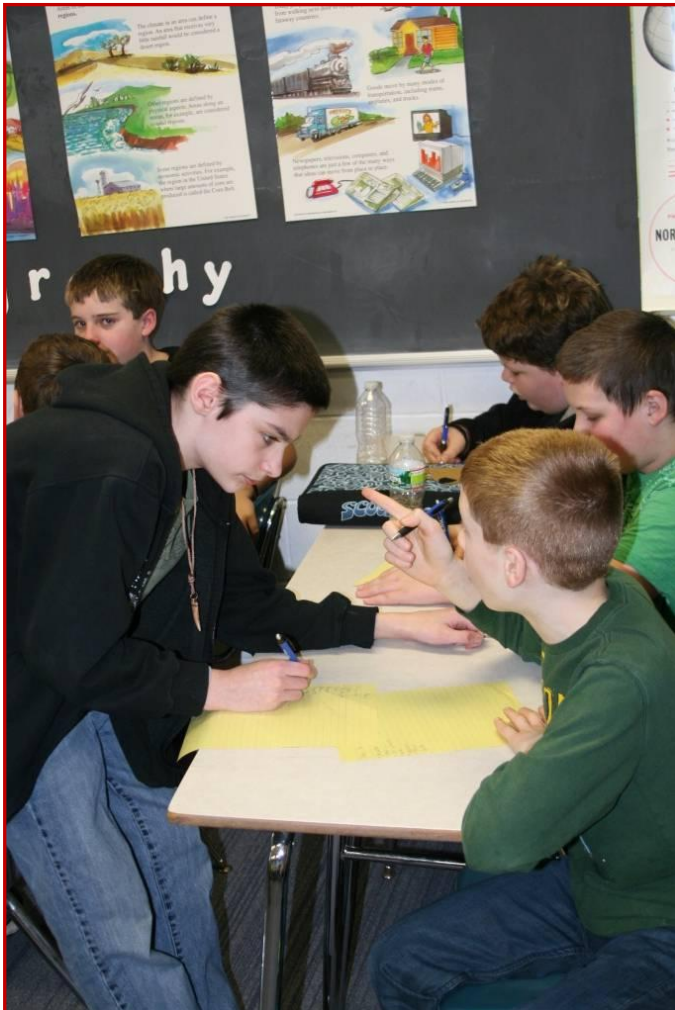
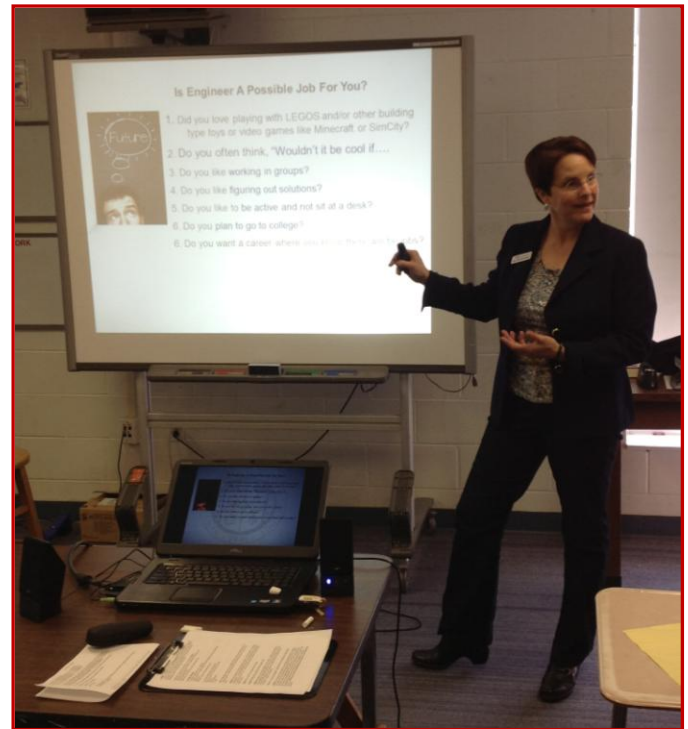
(Left) Aaron Pastor, Grant Slowik, Andrei Sacco & Brendan Mazzuchelli with Curtis Johnson and Dave Vassar of EMC



New England Institute of Technology

(Right) **Mrs. Kay Kimball Gruder** (Representative of the New England Institute of Technology)

During the presentation done by **Mrs. Kay Kimball Gruder**, High School Representative - New England Institute of Technology, students viewed a PowerPoint about the engineering process. They also watched a video, entitled "Discover Engineering – The Sum of All Thrills," about theme park engineers, with a focus on three middle school students who designed a roller coaster. **Ms. Gruder** asked the boys what they observed the students in the video doing when they were in the role of the engineers, including designing, modeling, building, problem solving, working together, re-designing, and trying again. The boys then thought of as many aspects of engineering that they could that exist in



one of

three environments – a football stadium, a movie theatre, and a ski mountain – and shared their answers with their classmates. Some examples they gave included that of an engineer who works on acoustics in a movie theatre, and an engineer who designs ski mountain trails and terrain parks. The boys also came up with an example of "high performance clothing" engineers – or textile engineers. **Ms. Gruder** suggested to the boys that they might also enjoy pursuing engineering careers, and gave them the opportunity to ask questions. Finally, they learned about potential and kinetic energy, and participated in a roller coaster design challenge that had to have a loop, a turn, and a hill. Using a simulation machine, they also got to ride a roller coaster that they created. **Ms. Gruder** complimented our students on how well-behaved and respectful they were, and what excellent questions they asked! The boys also appreciated her gift of a lanyard for each of them!

(Left) **Jacob Yanis** and **Ethan Harper** work on a task assigned by **Ms. Gruder**. The boys are listing all the items designed or created by an engineer in a football stadium, a movie theater, or a ski mountain.





(Left) **Benjamin Landry** and **Alexander Hartman** work on **Ms. Gruder's** challenge.

NE-TECH

www.neit.edu

Mr. Matt Fragala, Environmental Engineer



It was a pleasure to welcome **Mr. Matt Fragala** to **Mrs. Karen Cristian's** Sixth Grade Science classes on STEM Career Day! **Mr. Fragala**, an Environmental Engineer and Douglas resident, works for Environmental Health and Engineering (EH&E). He is a senior scientist who specializes in industrial hygiene, building systems diagnosis, building benchmarking, and indoor air quality. EH&H centers on environmental and facilities management of hospitals, research laboratories, and government facilities, and schools, as well as other private and public facilities. **Mr. Fragala** showed the students how to use particle measuring devices to measure the amount of dust particles, carbon dioxide, and carbon oxide in a building, so as to determine the indoor air quality. He and **Mrs. Cristian** then went on a tour of the school, monitoring air quality levels, including dust particle levels, carbon dioxide levels, and carbon monoxide levels.

(Right) **Alisia Demeo** pictured with **Mr. Fragala** in the area next to the auditorium.

The students learned from their use of **Mr. Fragala's** equipment that areas such as staircases and offices where there is more human traffic had higher particle counts than areas where there is less human traffic. The students also noticed that the levels of carbon monoxide were very low throughout the school. They believed this was due to the fact that carbon monoxide is mainly released from automobile emissions, factories, and other sources of combustion. The students remembered that high levels of carbon monoxide are extremely dangerous and can even cause death. Another important finding from the visit with **Mr. Fragala** was that rooms that contain more



people have slightly higher levels of carbon dioxide than rooms that contain fewer people. The reason for this is that humans give off carbon dioxide gas when they exhale. The students also learned that the level of carbon dioxide gas can be reduced by opening a window, because the level of carbon dioxide gas is lower outside the



building (in the natural environment). Both the students and **Mrs. Cristian** had a fun and educational visit with **Mr. Fragala** and thanked him for taking time from his busy schedule to visit us here at the IES. We truly appreciate him speaking with our students, and sharing with them the nature of the important work done by environmental engineers!



<http://www.eheinc.com>

(Above left) **Sixth graders: Chloe Lewis, Emma Heintz, Sarah Happy, Tiyan Marie Bassim, Jack Josey, Adam Gaulin, and Matthew Rhody.** (Above right) **Timothy Lanord, Jenna Keeman, Kaylie Silva, Haley Lockney, Nolan Beckwith, and Daniella Damasio.**



(Left) **Erica Peterson, Joshua Cyr, Jameson Gannon, Ben Landry, Devin Haire, Alec Patnaude, and Laurel Schultheiss.**

(Below Left) **Andrew Goyette, Keara Madden, Zachary O'Brien, and Cassidy Turner** use a particle measuring device to measure the amount of dust particles in the air in the area next to the auditorium.



**Engineering
is
Everywhere!**

